Journal of Public Health
https://doi.org/10.1007/s10389-026-02805-0

ORIGINAL ARTICLE

Changes in organisational framework conditions for workplace health management: a pre–post analysis of structures and processes

Hannah Bleier[1] · Jasmin Lützerath[1,3] · Ina Kayser[4] · Madeleine Gernert[1] · Andrea Schaller[2]

Received: 4 February 2026 / Accepted: 8 May 2026
© The Author(s) 2026

Abstract

Aim Strengthening employee health and reducing work-related stress are increasingly important concerns for organisations. Workplace health management (WHM), including workplace health promotion (WHP) activities, represents a promising approach for improving health in the workplace. However, effective implementation requires supportive organisational framework conditions (OFC). Despite their relevance, empirical research examining OFC and their role for WHM remains limited.

Subject and methods As part of the workplace health project "BAGGer" (German acronym for " Workplace offers for health promotion and violence prevention in WHM: impact model-based conception and evaluation of a WHP programme"), a pre–post analysis was conducted in care facilities to assess changes in the OFC for WHM before and after the implementation of environmental- and behavioural-related WHP activities. The pilot study was registered in the German Clinical Trials Register (DRKS-ID: DRKS00024961) on 9 April 2021. Data were collected using a standardised questionnaire and analysed to examine changes over time.

Results The results indicated no statistically significant changes in OFC for WHM across the observation period. Effect size estimates were negligible to very small.

Conclusion This study contributes to the quantitative assessment of organisational framework conditions in WHM and provides initial empirical insights into the applicability of the proposed OFC questionnaire. Given the study design, findings should be interpreted with caution. Further research is needed to examine its sensitivity to change and its use in different organisational contexts.

Keywords Workplace health promotion · Workplace health management · Organisational framework conditions · Pre–post analysis

Introduction

Current developments in the working world in general, including digital transformation, demographic change, skills shortage, disruptions caused by the SARS-CoV-2 virus and increasing mental demands, pose challenges for employees and can have a negative impact on productivity and health (Lange 2022; Liebrich 2022). Today's working world is often characterised by a higher volume of work and less time, which leads to subjective stress among employees. The perception of work-related stress can increase the likelihood of taking sick leave by a factor of 2 to 4 (Hultén et al. 2022). Therefore, strengthening employee health and reducing work-related stress are issues that concern various stakeholders such as health insurance funds and employers. The health insurance funds in Germany have an interest in keeping members healthy and are legally obliged to

✉ Hannah Bleier
hannah.bleier@stud.dshs-koeln.de

1 Institute of Movement Therapy and Movement-Oriented Prevention and Rehabilitation, German Sport University Cologne, 50933 Cologne, Germany

2 Institute for Sports Science, Department of Human Sciences, University of the Bundeswehr Munich, 85577 Neubiberg, Germany

3 Institute for Workplace Health Promotion, 51063 Cologne, Germany

4 Department of Communication & Business, IST University of Applied Sciences, 40233 Düsseldorf, Germany

Published online: 28 May 2026

implement health promotion services in various settings, including companies (Sozialgesetzbuch 1988). In times of an employee-oriented market, some employers are also trying to make themselves attractive to employees by taking workplace health more seriously. Polls indicate that employees in organisations promoting workplace health report a 5% higher level of satisfaction with their employer relative to those without access to such initiatives (Schroeder 2024).

One possible concept for advancing employee health is widely known as *workplace health management* (WHM). In Germany, WHM is understood as the development of organisational framework conditions, structures and processes aimed at promoting health-oriented work and organisational design, and empowering employees to engage in health-promoting behaviour (Badura and Steinke 2009). This underlines the broad scope of WHM, which can be conceptualised as an overarching framework consisting of three interrelated pillars: *occupational safety*, *operational integration management* and *workplace health promotion* (Pfannstiel and Mehlich 2018). For the purpose of completeness, medical preventive services provided by the German pension insurance scheme can also be mentioned, which can be used voluntarily by employees and must be supported by the employer (Lange 2022). The first pillar of *occupational safety* describes the employer's duty to assess health hazards in the workplace and to determine necessary protective measures (Federal Ministry of Labor and Social Affairs 2021). In Germany, this is determined by legal requirements and thus specifically geared to Germany. Depending on the setting, standardised occupational health and safety regulations specify safe workplace and workplace design, safe use of work equipment, noise protection, occupational health precautions, load handling or handling hazardous or biological substances (Federal Ministry of Labor and Social Affairs 2021). These apply to both employers and employees (Occupational Health and Safety Act [Arbeitsschutzgesetz] 1996).

The second pillar, *operational integration management* (OIM), aims to overcome incapacity for work as far as possible (if sick leave > 6 weeks in a year), prevent renewed incapacity to work and retain the job. This is also mandated by law for German employers, while participation remains voluntary for employees (Sozialgesetzbuch 2001). The third pillar, *workplace health promotion* (WHP), is optional for employers and employees. WHP can describe all joint activities of employers, employees and society to improve health and well-being in the workplace. Recommendations are provided by the federal prevention guidelines in Germany regarding the WHP process, encompassing preparation, analysis, implementation and evaluation (German statutory health insurance 2020). Fields of activity can be environmental-related (e.g. work culture, leadership training) and behavioural-related activities (e.g. exercise, ergonomics, nutrition, mental health) (European Network for Workplace Health Promotion 1997; German statutory health insurance 2020). It becomes apparent that the pillars of WHM are partially tied to legal requirements and partially open to organisational flexibility in their design. It should be noted, however, that the funds which German statutory health insurance providers are permitted to allocate to companies for WHP are limited to specific areas following prevention guidelines (GKV Spitzenverband 2025). Nevertheless, regarding applicability in other countries, the underlying principles are generally transferable, and the thematic content can, in theory, be adapted internationally to support the promotion of workplace health (GKV Spitzenverband 2025).

Regarding the effects of WHP, current research reveals both stronger and weaker aspects (Barthelmes et al. 2019). A review of reviews indicated that workplace interventions, such as physical activity or training and education programmes, can reduce pain and other symptoms among employees with musculoskeletal disorders (Pieper et al. 2019). However, other studies found that the impact of WHP programmes on musculoskeletal health remains unclear (Barthelmes et al. 2019). Nutrition programmes are most effective when combined with other measures rather than being solely environmental-related. In the areas of substance abuse and alcohol prevention, further research is still needed. Various approaches to stress reduction and mental health, such as cognitive-behavioural programmes, show the strongest evidence of effectiveness (Barthelmes et al. 2019). Workplace health activities can also reduce absenteeism and associated costs, with the return on investment factor averaging 2.7. In particular, multicomponent worksite programmes have demonstrated positive effects (Pieper et al. 2019). However, WHM can and should be understood as a comprehensive management approach aimed at developing both employees and organisations (Lange 2022). Effective WHM goes beyond isolated WHP activities, as their effectiveness is strongly influenced by organisation-specific contextual factors (Nielsen and Randall 2013). To establish and sustain effective WHM processes, certain organisational prerequisites are required (Barthelmes et al. 2019; Faller 2017). In the following, these prerequisites are conceptualised as *organisational framework conditions* (OFC). OFC refer to structural and process-related characteristics within an organisation that enable, shape and sustain WHM. Rather than representing isolated elements, OFC can be understood as a set of complementary and interrelated organisational conditions that jointly influence the implementation and effectiveness of WHM. Compared with traditional outcome indicators such as turnover, employee satisfaction or sickness absence, OFC focus on the underlying organisational conditions that precede and accompany WHM processes. From a management perspective, they can therefore be understood as enabling conditions for WHM implementation and development (Zeike and Pfaff 2022). Existing research

has identified several OFC that are relevant factors associated with successful WHM, including structured planning processes, resource availability, coordination structures, employee participation, communication, and cooperation with internal and external stakeholders (Barthelmes et al. 2019; Elke et al. 2015; Faller 2017). However, empirical studies examining these factors in combination and over time remain scarce. In this study, OFC are operationalised through four complementary indexes capturing key dimensions of OFC in WHM. These include *health promoting willingness*, *health promoting management*, *workplace health structures* and *workplace health activities*. The study aims to examine changes in OFC within the context of a WHM project.

The following research question is addressed:

Which changes in the OFC for WHM can be observed after 18 months of a WHM project?

Given the exploratory nature of the study and the complexity of organisational change processes, the analysis focuses on identifying observable changes in OFC over time without assuming causal relationships.

Methods

The pre–post analysis concerns the WHM pilot project "BAGGer" (November 2020–October 2022), funded by the German Federal Ministry of Health and registered in the German Clinical Trials Register (DRKS ID: DRKS00024961). "BAGGer" was approved by the ethics committee of the German Sport University Cologne (reference number 050/2021). The acronym "BAGGer" is the German abbreviation of the project name "Workplace offers for health promotion and violence prevention in WHM: an impact model-based conception and evaluation of a WHP programme ". In this pilot project, a target group-specific WHP programme for the participating care facilities (acute care hospitals, long-term care facilities and home-based long-term care) was developed and implemented through a participatory approach. The overall aim of this pilot project was to promote health and improve the working situation for nursing staff. The target group of care facilities and hospitals was selected because, in addition to the predicted shortage of nursing staff, the healthcare sector is confronted with several pressures in everyday working life, while at the same time there is an increased risk of long-term absenteeism due to illness and early retirement (Sell et al. 2009).

Regarding the present research question and methodology, a comprehensive state analysis and an assessment of the OFC in 16 participating companies (pre-analysis) was conducted. A target group-specific WHP programme for the companies was jointly developed with each care facility individually and implemented over 18 months as a contribution to WHM. At the end of the project, the OFC were reassessed (post-analysis).

Setting

The participating companies were acute care hospitals (ACH), long-term care facilities (LTC facilities) and home-based long-term care (home-based LTC) in Germany. In consideration of the organisational units, a relatively small sample of 16 care facilities participated in the pre-analysis (March–June 2021) and 14 in the post-analysis (August–October 2022). One home-based LTC and one LTC facility dropped out before the post-analysis. The company sizes (in numbers of employees) at the time of the post-analysis are shown in Table 1.

Given the nature of a pilot study and the support with the WHP programme, no control group was included. Participating organisations received an individualised WHP programme rather than a standardised programme. This approach was chosen to reflect real-world implementation conditions and organisational needs. The implemented WHP programme was derived by each care facility depending on their individual analysis and plans for implementation.

The implementation of the activities therefore started after the results of the analyses, which were between April 2021 and October 2022. A kick-off workshop was then held in every company to get employees on board and set the process in motion within the organisation itself. The implemented activities were continuously counted and documented in a structured Excel spreadsheet by the researchers (JL and HB). The range of WHP activities can be seen in Table 2.

Table 1 Number of employees per company at the time of the post-analysis (2022)

	Care facilities	**Home-based LTC** $n=4$ (1 drop-out)	**LTC facility** $n=6$ (1 drop-out)	**ACH** $n=4$
Company size (number of all employees; nurses and other staff)	< 10 employees	0	0	0
	10–49 employees	1	1	0
	50–249 employees	1	5	1
	≥ 250 employees	2	0	3

Table 2 Range of possible WHP activities during the WHM-pilot project

Activity	Description
Kick-off	Within the framework of an initial kick-off workshop with representatives of all persons involved in health promotion (established or expanded steering committee), a common understanding of health promotion is defined and goals are set
Steering committee	Quarterly working group to determine needs, plan and implement WHP offers and WHP topics, communication and evaluation of the health promotion process
Employee workshop on work design	Within the framework of moderated group discussions, the employees analyse their own work situation. Concrete solution ideas are developed for identified problems and are presented to the decision-makers in an action plan
Ergonomics consulting	Supervision of the work process on-site and preparation of written recommendations for the working environment conducive to movement
Movement scout	Training of movement and relaxation coaches to be able to offer small units by internally trained multipliers
Leadership training	Training courses on the topics of self-care and being a role model as a leader and health-friendly employee management
Team-building training	Group workshop with a focus on social interaction with each other and development of appreciative cooperation in teams
Communication training	Training on expectations and attitudes in conversations as well as de-escalation conversation techniques
Violence prevention training	Training in violence prevention and de-escalation, recognizsing situations that trigger violence and dealing with aggressive behaviour
Internally implemented activities	Internal measures that were derived in the steering committee and implemented independently by the company
Stress management training	Behavioural training for stress management and strengthening of psychological resources
Back health training	Training on basic tension in the body, relieving postures in care, and body awareness and muscle-building exercises
Health promotion event day	Event day to promote WHP activities face-to-face with the aim of making employees aware of their health and health prevention, and to motivate them to adopt a healthy work- and lifestyle

Data collection

Organisational framework conditions

Building on a previous study (Bleier et al. 2022), the present study aimed to assess changes in OFC using a pre–post design. The questionnaire was chosen to capture key structural and process-related dimensions of WHM. In line with the conceptual approach (see "Introduction"), four indexes were used to represent different but interrelated dimensions of OFC. The *health promoting willingness index* (three items) reflects the strategic orientation of the organisation, including leadership support and awareness of WHP (Pfaff et al. 2008). The *health promoting management index* (nine items) captures organisational processes such as resource allocation, planning and the use of structured management approaches (e.g. plan, do, check, act [PDCA] cycle) (Pfaff et al. 2008).

The *workplace health structures* dimension (five items) addresses structural conditions, including the existence of steering committees, employee participation and cooperation with internal and external partners (Pfaff et al. 2008). The *workplace health activities index* (six items) represents the implementation level, covering both behavioural and environmental WHP measures (Pfaff et al. 2008). Together, these measures provide a comprehensive assessment of OFC as an interconnected set of strategic, structural and implementation-related organisational factors. To operationalise these dimensions, validated instruments from previous research were integrated into a composite questionnaire (Pfaff et al. 2008) (see Bleier et al. 2022). The selection of questionnaires followed the aim of covering multiple, complementary aspects of OFC within a single measurement framework.

Table 3 presents the assignment of the applied instruments to the respective OFC dimensions.

To assess the OFC, pre- and post-analysis were conducted before [t(0) = March–June 2021] and after the implementation of the WHP programme [t(1) = August–October 2022]. As the development and implementation of the activities required some time, the survey periods differ from the actual project start and end dates. The participants were managers responsible for the nursing staff in the participating care facilities. The data were collected from a single respondent per organisation, typically a person from upper management with specific responsibility and insight into organisational structures and processes (director of nursing or manager of a care facility). This approach was chosen to ensure feasibility and comparability across organisations; however, it primarily captures an individual perspective on organisational

Table 3 Questionnaires and indexes used to measure the OFC

OFC index	Operational OFC dimensions	Questionnaire and response options
Health promoting willingness index (three items)	Continuous awareness-raising, leadership supporting WHP activities	Eleven-point Likert scale (from 0 = "do not agree at all" to 10 = "fully agree") (Pfaff et al. 2008)
Health promoting management index (nine items)	Financial, staff and time resources, PDCA cycle, internal public relations work, structured plan	Eleven-point Likert scale (from 0 = "do not agree at all" to 10 = "fully agree") (Pfaff et al. 2008),
Workplace health activities index (six items)	Behavioural-related and environmental-related WHP activities	Eleven-point Likert scale (from 0 = "do not agree at all" to 10 = "fully agree") (Pfaff et al. 2008)
Workplace health structures and supporting cooperation partner (five items)	Formation of a steering committee, healthy leadership, participation and empowerment, work with cooperation partner	Four nominal scaled response options ("yes" and "no") (Pfaff et al. 2008), One non-standardised question ("work with cooperation partner")

practices. Potential participants received an information letter via email. The participants gave informed consent. Further details on the data collection process are available in the publication describing the pre-analysis in greater detail (Bleier et al. 2022).

Statistical analysis

To determine which changes in the OFC were visible after the WHM project, a pre–post analysis of the survey on OFC [t(0) and t(1)] was carried out in IBM SPSS Statistics (version 31.0). Only care facilities with complete data at both measurement points t(0) and t(1) were included in the statistical analyses. In our previews study, in addition to the results for each single item, we decided to calculate indexes by averaging the items within one questionnaire topic. Structural items were analysed descriptively and not aggregated into indexes. Therefore, also in the post-analysis, the indexes on *health promoting willingness*, *health promoting management* and *workplace health activities* were calculated by taking the mean value of all the items on each scale.

To assess the internal consistency of the indexes, Cronbach's alpha was calculated for *health promoting willingness*, *health promoting management* and *workplace health activities*. Cronbach's alpha was used to determine whether the items within each index measure a coherent construct and could therefore be combined into a mean score. To determine whether the differences between the pre-analysis t(0) and the post-analysis t(1) were statistically significant, a paired *t*-test was calculated for the three indexes (*health promoting willingness*, *health promoting management* and *workplace health activities*). The significance level was set at 0.01 to reduce type I error risk. Effect sizes for the pre–post comparisons were calculated using Cohen's *d* for each index. Due to their nominal character, the items on the *WHP structures* could only be evaluated descriptively across all care facilities for frequencies between t(0) and t(1).

Results

Fourteen care facilities (Table 1) took part in both the pre- and post-analysis. All care facilities (100%) provided a complete response in the assessment of the OFC. The implemented activities varied considerably across care facilities and were conducted between April 2021 and October 2022. Depending on the care facility, the frequency of WHP activities differed. Most frequently implemented were steering committees ($N = 98$), employee workshops on work design ($N = 39$) and internally implemented activities ($N = 31$). The smallest number of implementations was observed for movement scout and stress management training ($N = 1$). Table 4 shows all implemented WHP activities summed and averaged over all participating companies.

Table 4 Sum and mean of implemented WHP activities over all companies ($N = 14$)

Implemented WHP activities	Sum	Mean (±SD) [Min–Max]
Kick-off-workshop	14	1.0 (±0.0) [1–1]
Steering committee	98	7.0 (±3.9) [4–14]
Employee workshop on work design	39	2.8 (±2.1) [0–5]
Ergonomic consulting	3	0.2 (±0.6) [0–2]
Movement scout	1	0.07 (±0.3) [0–1]
Leadership training	10	0.7 (±1.9) [0–7]
Team development	3	0.2 (±0.4) [0–1]
Communication training	6	0.4 (±0.5) [0–1]
Violence prevention training	6	0.4 (±0.8) [0–2]
Internally implemented activities	31	2.2 (±2.2) [0–6]
Stress management training	1	0.1 (±0.3) [0–1]
Back health training	2	0.1 (±0.5) [0–2]
Health promotion event day	9	0.6 (±0.5) [0–1]

Table 5 presents the results from the pre-analysis [t(0) = March–June 2021] and post-analysis [t(1) = August–October 2022], referred to as indexes for *health promoting willingness*, *health promoting management* and *WHP activities*. The internal consistency of the scales was generally good. For the *health promoting willingness* index, Cronbach's alpha was 0.69 at t(0) and 0.78 at t(1), indicating acceptable internal consistency. The *health promoting management* index demonstrated high reliability [t(0) α = 0.87; t(1) α = 0.88]. The *WHP activities* index also showed very good internal consistency [t(0) α = 0.86; t(1) α = 0.91].

The indexes were then used to analyse mean differences between t(0) and t(1) via paired *t*-tests. The following assumptions for the paired *t*-test were assessed prior to analysis: all dependent variables were measured on a metric scale; repeated measurements were obtained from the same care facilities at two measurement points [t(0) and t(1)], and the normality of the difference scores was evaluated using visual inspection of histograms and Q–Q plots as well as the Shapiro–Wilk test. The latter indicated no significant deviations from normality (*health promoting willingness*: $W = 0.906$, $p = 0.138$; *health promoting management*: $W = 0.965$, $p = 0.798$; *WHP activities*: $W = 0.922$, $p = 0.270$). Paired *t*-tests did not indicate statistically significant differences between pre-analysis (t0) and post-analysis (t1) across the participating care facilities for the indexes on *health-promoting willingness*, *health-promoting management* and *WHP activities*.

The significance level was set at α = 0.01. Details can be seen in Table 5. Effect size estimates (Cohen's *d*) were negligible to very small (*health promoting willingness*, $d = 0.05$; *health promoting management*, $d = 0.06$; *WHP activities*, $d = 0.12$).

Descriptive results for *WHP structure* items indicated a higher proportion of "yes" responses in four of the five items from t(0) to t(1) (*WHP part of management development*, *steering committee for WHP*, *employee participation*, *responsibility on company units*). In contrast, the item on *cooperation partners* showed a lower proportion of affirmative responses at t(1) compared to t(0) (Fig. 1). These changes are descriptive in nature and were not subjected to inferential statistical testing.

Discussion

Summary of findings

The aim of this study was to examine changes in OFC among WHM over the course of an 18-month WHM project. No statistically significant differences in OFC were observed between the beginning and the end of the project, and effect sizes were negligible. Overall, this study represents an initial

Table 5 Results of the indexes on OFC

	Index health promoting willingness [Min: 1, Max: 10]		**Index health promoting management** [Min: 1, Max: 10]		**Index WHP activities** [Min: 1, Max: 10]	
	t(0)	**t(1)**	**t(0)**	**t(1)**	**t(0)**	**t(1)**
Home-based LTC 1	6.3	8.0	3.7	5.8	2.7	7.8
Home-based LTC 2	7.7	8.0	8.0	9.3	9.0	8.2
Home-based LTC 3	9.3	8.0	8.7	8.3	8.7	7.83
Home-based LTC 5	6.7	7.0	5.8	8.0	5.0	7.3
LTC facility 1	8.0	6.7	5.3	7.2	6.2	8.2
LTC facility 2	6.0	7.3	7.8	8.6	6.3	7.5
LTC facility 3	9.3	8.0	8.7	8.3	8.7	7.8
LTC facility 4	7.3	8.7	7.4	3.8	5.2	3.3
LTC facility 5	3.7	3.0	0.0	5.3	1.7	4.8
LTC facility 6	6.0	5.7	4.3	5.4	4.8	5.7
ACH 1	4.3	6.3	9.2	5.9	4.3	2.3
ACH 2	7.3	6.7	6.3	4.2	6.5	3.7
ACH 3	6.0	5.0	4.9	3.1	4.8	3.7
ACH 4	6.0	6.3	4.9	3.9	4.8	4.7
Mean value and SD over all care facilities	6.7 (±1.6)	6.7 (±1.5)	6.1 (±2.5)	6.2 (±2.1)	5.6 (±2.2)	5.9 (±2.1)
Paired *t*-test [two-tailed *p*-value for differences between t(0) and t(1)]*	$p = 0.882$ $t(13) = -0.152$		$p = 0.804$ $t(13) = -0.254$		$p = 0.629$ $t(13) = -0.495$	

*Significance level 0.01

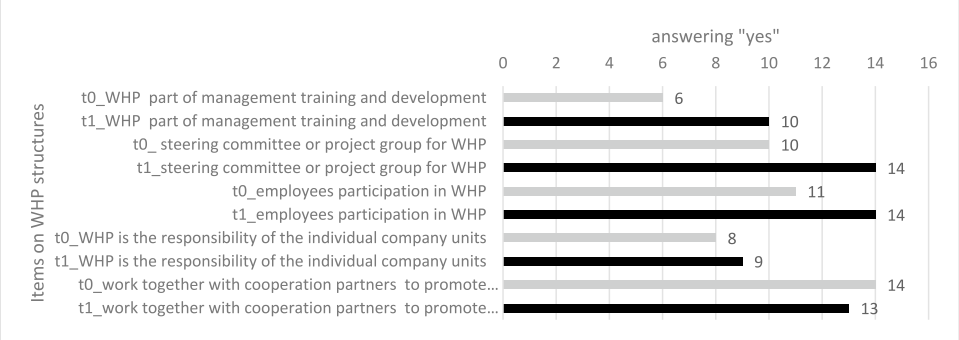


Fig. 1 Results for *WHP structures* t(0) and t(1)

attempt to assess multiple OFC within a systematic and holistic WHM project using both cross-sectional and longitudinal approaches. At the descriptive level, slight improvements were observed for items related to WHP structures.

Study aims in context

Due to the high heterogeneity in the field of WHP and WHM evaluation, direct comparisons across other studies remain limited. Existing evidence on organisational interventions is inconsistent, partly due to differences in design, implementation strategies and outcome measures (Montano et al. 2014; Roodbari et al. 2022; von Thiele Schwarz et al. 2024). Furthermore, many studies lack process evaluations, which leads to a loss of valuable insights for practical implementation. The generally low methodological quality of existing studies also poses a major challenge in identifying success factors and process variables, resulting in considerable variation in reported outcomes (Barthelmes et al. 2019). Few studies have addressed both dimensions considered in this study—namely, multiple OFC indicators and individually tailored WHP programmes at the organisational level. Descriptively, only minor changes in OFC were observed over time. Given the lack of directly comparable longitudinal studies, we conducted broader research on comparable studies. The results suggest that organisational conditions are linked to health and economic outcomes. For example, organisations with higher scores in the HERO Health and Well-being Best Practices Scorecard achieved more favourable cost trends over time (Rosenbaum et al. 2020). Other authors have proposed theoretical frameworks for assessing workplace health processes holistically at the organisational level (Buxton et al. 2019; Nielsen and Abildgaard 2013; Nielsen and Randall 2013). For example, the "throughput model" by Pfaff resembles the indexes used in this study, as it captures structural and process-related aspects of WHM and reflects both qualitative and quantitative dimensions (Pfaff and Schrappe 2011). Similarly, our thematic constructs align with the programme theories identified in Roodbari's realist synthesis, which highlights that organisational interventions operate through multiple interacting mechanisms—such as implementation adherence, communication, employee participation and management support—leading to context-dependent outcomes (Roodbari et al. 2022). As these mechanisms often act in combination, specific outcomes cannot easily be attributed to individual components, a pattern that may also be reflected in our data. In addition, the model by Nielsen and Randall (2013) emphasises the importance of contextual factors, implementation processes and actors' perceptions when evaluating organisational interventions. It also highlights the need for mixed data sources to adequately capture these dimensions, although methodological standards are still evolving. While several OFC dimensions in our study overlap with these frameworks, empirical comparability remains limited.

Recent methodological developments further suggest combining quantitative and qualitative approaches, for example through instruments assessing implementation quality or configurational comparative methods (von Thiele Schwarz et al. 2024). The outcomes of most existing studies evaluating organisational interventions concern the direct effects of WHP activities on staff members, but do not deal with OFC as a *management structure* for WHM. Consistent with the picture of the aforementioned inconsistent results is a study which evaluates the effectiveness of a participatory physical and psychosocial workplace intervention on the work ability and recovery of industrial workers (Gupta et al. 2018). The intervention did not improve the outcome factors. This may be due to the extra work the intervention meant for the employees or an insufficient match between the intervention components implemented and the predetermined outcomes (Gupta et al. 2018). Another organisational intervention study, on the other hand, showed positive changes among employees in preschools that implemented a participatory organisational-level intervention focusing on the core task at work. They had a lower incidence of short-term sickness absence compared with employees in the control group (Framke et al. 2016). With such examples, the aforementioned heterogeneity in design and outcome becomes visible.

In summary, given the limited and heterogeneous evidence on pre–post evaluations of OFC in WHM, this study contributes to an emerging area of research by examining

OFC in real-world settings. At the same time, the findings highlight the methodological complexity of evaluating OFC and underline the need for further research to refine measurement approaches and strengthen the evidence base.

Limitations

Although this study provides insights into a pilot project and represents a step toward longitudinal measurement of OFC for WHM, it has several limitations. Several factors may have contributed to the lack of significant changes over time in the OFC. The intervention period of 15–18 months for the project may be too short to induce measurable organisational-level changes in the setting studied. Care facilities and hospitals may experience issues with shortage of staff and therefore inadequate time resources for working on WHM (Jacobs et al. 2020). Additionally, representing the OFC as an index may be practical for benchmarking, but it could be too insensitive to detect changes, as only the average across all items is considered. Given the small sample size ($N = 14$), the study had limited statistical power to detect small to moderate effects, which may partly explain the lack of statistically significant findings despite small descriptive improvements in some OFC dimensions. In addition, the absence of a control group limits the ability to attribute observed changes specifically to the intervention. Furthermore, the use of individually tailored WHP programmes reduces comparability across organisations and complicates the identification of specific intervention effects. At the same time, the tailored approach reflects real-world practice in WHP, where interventions are typically adapted to organisational needs. While this enhances the practical relevance of the study, it comes at the expense of internal validity and experimental control and limits the generalisability of the findings. Future studies should aim to include larger samples, control groups and, where feasible, more standardised intervention components to strengthen internal validity while balancing practical relevance. A larger number of participating organisations would allow the application of further statistical analyses, such as post hoc power analysis, and improve the statistical significance of the results. Additionally, qualitative data could have provided further insight into why the OFC did or did not change. Participants may have experienced a learning effect while engaging in the WHM process between the surveys at t(0) and t(1). Responses at t(1) could be influenced by retrospective bias, leading to more critical evaluations than at t(0), even though descriptive results indicate some improvements in company structures (Spencer et al. 2017).

A key limitation of this study is that OFC were assessed based on a single respondent per organisation. Although these respondents were selected for their expertise and position, this approach may not fully reflect the actual implementation or perception of framework conditions across the organisation. Consequently, the validity of the data at the organisational level may be limited. Future research should include multiple respondents from different roles or hierarchical levels, or apply aggregated or group-based assessment approaches, to obtain a more comprehensive representation of OFC. Due to the heterogeneous implementation of WHP activities across participating companies, it is difficult to attribute observed changes in OFC to specific intervention components. This substantial variability poses methodological and statistical challenges for quantitative evaluation. With a larger sample size, exploratory approaches such as Spearman rank correlations could nevertheless be considered to examine associations between the intensity or scope of WHP activities and changes in OFC, while acknowledging their limited explanatory power. It can also be discussed whether there could be additional dimensions to the examination of this topic. When it comes to promoting the well-being of employees, one possible addition to the strategy would be to examine the company structures for people with special needs, such as disabilities and neurodiversity. A design including control and intervention groups—which was not feasible in this project for ethical reasons (non-treatment in health-related topics) and due to the lack of a standardised WHP programme—would have allowed for more robust statistical analyses and a better assessment of potential causal relationships. However, tailoring WHP activities to the specific needs of each company is an important success factor in WHM and represents a key strength of our project (Barthelmes et al. 2019).

Conclusion

The state of research outlines factors that promote an organisational framework for WHM (Elke et al. 2015). This study contributes to the emerging field of WHM research by proposing a concrete, longitudinal approach for measuring and comparing OFC over time. While theoretical models and conceptual frameworks for WHM evaluation exist, empirical applications—especially those that track changes across multiple measurement points—remain rare. By integrating an OFC assessment with an individually implemented WHP programme, this study addresses a notable gap in the literature. Although no statistically significant changes in OFC were detected over the project period, the findings underscore the importance of systematically assessing organisational conditions for WHM. This is particularly relevant given that such conditions are rarely evaluated, especially in longitudinal research. Improvements observed at the descriptive level suggest potential for development. The absence of significant effects further highlights the inherent complexity and methodological challenges associated with evaluating organisational-level interventions, including

variability in intervention design, implementation fidelity and contextual influences (Roodbari et al. 2022).

The methodological approach presented here—assessing quantitative OFC in a pre–post analysis before and after a WHM project—can be used as a starting point for future research. Expanding this design to larger samples and incorporating additional data sources (e.g., company key performance indicators such as employee satisfaction, absenteeism, turnover or application rates) may enrich the outcomes. Furthermore, complementing quantitative measurements with qualitative methods would enable a deeper understanding of mechanisms and contextual conditions that facilitate or impede organisational health processes and their outcomes (Roodbari et al. 2022). Overall, this study offers an initial methodological foundation for longitudinal WHM evaluation and contributes to advancing the systematic assessment of OFC as key enablers of effective WHM.

Acknowledgements We want to express gratitude to all study participants and the participating care facilities for the support during the planning and execution of the data collection.

Author contributions AS and HB conceptualised the study. Data preparation, data collection and analysis were performed by HB, JL, IK, MG and AS. The manuscript was written by HB and revised by AS and IK. All authors read and approved the final manuscript.

Funding Open Access funding enabled and organized by Projekt DEAL. The study presented is part of the BAGGer project (Workplace offers for health promotion and violence prevention in WHM: impact model-based conception and evaluation of a WHP programme) funded by the Federal Ministry of Health (Bundesministerium für Gesundheit [BMG]), grant number BVA 2520ZPK744.

Data availability The datasets generated during the current study are not publicly available due to ethical and privacy considerations but are available from the corresponding author on reasonable request.

Declarations

Ethics approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the German Sport University Cologne (reference number 050/2021).

Consent to participate Informed consent was obtained from all individual participants included in the study.

Consent for publication Informed consent for publication of anonymised data was obtained from all participants.

Competing interests The authors declare no conflict of interest.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/.

References

Badura B, Steinke M (2009) Betriebliche Gesundheitspolitik in der Kernverwaltung von Kommunen: Eine explorative Fallstudie zur aktuellen Situation [Occupational health policy in municipal administrations]. Hans Böckler Stiftung

Barthelmes I, Bödeker W, Sörensen J, Kleinlercher K-M, Odoy J (2019) iga.Report 40: Wirksamkeit und Nutzen arbeitsweltbezogener Gesundheitsförderung und Prävention: Zusammenstellung der wissenschaftlichen Evidenz 2012 bis 2018 [Effectiveness and benefits of workplace health promotion and prevention: summary of scientific evidence 2012–2018]. iga. https://www.iga-info.de/publikationen/. Accessed 26 January 2026

Bleier H, Lützerath J, Schaller A (2022) Organizational framework conditions for workplace health management in different settings of nursing—a cross-sectional analysis in Germany. Int. J Environ Res Public Health 19:3693. https://doi.org/10.3390/ijerph19063693

Brand SL, Thompson Coon J, Fleming LE, Carroll L, Bethel A, Wyatt K (2017) Whole-system approaches to improving the health and wellbeing of healthcare workers: a systematic review. PLoS ONE 12:e0188418. https://doi.org/10.1371/journal.pone.0188418

Buxton L, Batchelor L, Loynes T (2019) Workplace wellness: measuring the success. Int J Spa Wellness 2:107–114. https://doi.org/10.1080/24721735.2020.1770983

Elke G, Gurt J, Möltner H, Externbrink K (2015) Arbeitsschutz und betriebliche Gesundheitsförderung: Vergleichende Analyse der Prädiktoren und Moderatoren guter Praxis [Occupational health and workplace health promotion: comparative analysis of predictors and moderators of good practice]. Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, Dortmund. https://www.baua.de/. Accessed 26 January 2026

European Network for Workplace Health Promotion (1997) Luxembourg declaration on workplace health promotion in the European Union. https://www.enwhp.org/resources/toolip/doc/2022/01/26/1_luxembourg_declaration_2018.pdf. Accessed 26 January 2026

Faller G (2017) Lehrbuch betriebliche Gesundheitsförderung [Textbook of workplace health promotion]. Hogrefe

Federal Ministry of Labor and Social Affairs (2021) Was ist Arbeitsschutz? Effizienter Arbeitsschutz und Unfallvermeidung sind in einer immer schnelleren und anspruchsvolleren Arbeitswelt elementar [What is occupational safety? Efficient occupational safety and accident prevention in an increasingly fast and demanding work environment]. https://www.bmas.de/DE/Arbeit/Arbeitsschutz/erklaerung-arbeitsschutz.html. Accessed 26 January 2026

Framke E, Sørensen OH, Pedersen J, Rugulies R (2016) Effect of a participatory organizational-level occupational health intervention on short-term sickness absence. Scand J Work Environ Health 42:192–200. https://doi.org/10.5271/sjweh.3559

German Statutory Health Insurance [GKV-Spitzenverband] (2020). Leitfaden Prävention: handlungsfelder und Kriterien nach §20 Abs.2 SGBV

GKV-Spitzenverband [National Association of Statutory Health Insurance Funds] (2025) Leitfaden Prävention. Handlungsfelder und Kriterien nach § 20 Abs. 2 SGB V zur Umsetzung der §§ 20, 20a und 20b SGB V [Prevention guidelines: Areas of action and

criteria pursuant to Section 20 (2) SGB V]. Berlin. https://www.gkv-spitzenverband.de/media/dokumente/krankenversicherung_1/praevention_selbsthilfe_beratung/praevention/praevention_leitfaden/20251218_Leitfaden_Praevention_2025_barrierefrei.pdf. Accessed 02 February 2026

Gupta N, Wåhlin-Jacobsen CD, Abildgaard JS, Nøhr Henriksen L, Nielsen K, Holtermann A (2018) Effectiveness of a participatory physical and psychosocial intervention to balance the demands and resources of industrial workers. Scand J Work Environ Health 44:58–68. https://doi.org/10.5271/sjweh.3689

Hultén AM, Bjerkeli P, Holmgren K (2022) Work-related stress and future sick leave in a working population seeking care at primary health care centres: a prospective longitudinal study using the WSQ. BMC Public Health 22:851. https://doi.org/10.1186/s12889-022-13269-8

Jacobs K, Kuhlmey A, Greß S, Klauber J, Schwinger A (eds) (2020) Pflege-Report 2019: Mehr Personal in der Langzeitpflege – aber woher? [2019 Care Report: More staff in long-term care – but where will they come from?]. Springer

Jung J, Nitzsche A, Neumann M, Wirtz M, Kowalski C, Wasem J, Stieler-Lorenz B, Pfaff H (2010) The Worksite Health Promotion Capacity Instrument (WHPCI). BMC Public Health 10:550. https://doi.org/10.1186/1471-2458-10-550

Lange M (2022) Verständnis und Rahmenmodell des Betrieblichen Gesundheitsmanagements [Understanding and framework model of occupational health management]. In: Lange M, Matusiewicz D, Walle O (eds) Praxishandbuch Betriebliches Gesundheitsmanagement: Grundlagen – Standards – Trends [Practical Handbook on Occupational Health Management: Fundamentals – Standards – Trends]. Haufe-Lexware, pp 101–122

Lange M, Matusiewicz D, Walle O (eds) (2022) Praxishandbuch Betriebliches Gesundheitsmanagement: Grundlagen – Standards – Trends [Practical Handbook on Occupational Health Management: Fundamentals – Standards – Trends]. Haufe-Lexware. https://doi.org/10.34157/9783648158821

Liebrich A (2022) Theoretische Rahmenkonzepte im Kontext Gesundheit und Krankheit [Theoretical frameworks in the context of health and illness]. In: Lange M, Matusiewicz D, Walle O (eds) Praxishandbuch Betriebliches Gesundheitsmanagement: Grundlagen – Standards – Trends [Practical Handbook on Occupational Health Management: Fundamentals – Standards – Trends]. Haufe-Lexware, pp 31–33

Montano D, Hoven H, Siegrist J (2014) Effects of organisational-level interventions at work on employees' health. BMC Public Health 14:135. https://doi.org/10.1186/1471-2458-14-135

Nielsen K, Abildgaard JS (2013) Organizational interventions. Work Stress 27:278–297. https://doi.org/10.1080/02678373.2013.812358

Nielsen K, Randall R (2013) Opening the black box. Eur J Work Organ Psychol 22:601–617. https://doi.org/10.1080/1359432X.2012.690556

Occupational Health and Safety Act (Arbeitsschutzgesetz) (1996) Federal ministry of justice. https://www.gesetze-im-internet.de/arbschg/. Accessed 26 January 2026

Pfaff H, Nitzsche A, Jung J (2008) Handbuch zum "Healthy Organisational Resources and Strategies (HORST)"-Fragebogen [Manual for the Healthy Organizational Resources and Strategies (HORST) questionnaire]. Forschungsbericht 03–2008, Universität zu Köln, Köln

Pfaff H, Schrappe M (2011) Einführung in die Versorgungsforschung. In: Pfaff H, Glaeske G, Neugebauer E, Schrappe M (eds.) Lehrbuch Versorgungsforschung. Stuttgart: Schattauer Verlag S 2–57

Pfannstiel MA, Mehlich H (2018) BGM – Ein Erfolgsfaktor für Unternehmen. Springer Fachmedien

Pieper C, Schröer S, Eilerts A-L (2019) Evidence of workplace interventions. Int J Environ Res Public Health 16:3553. https://doi.org/10.3390/ijerph16193553

Ragin C, Zaret D (1983) Theory and method in comparative research. Soc Forces 61:731–754. https://doi.org/10.2307/2578132

Roodbari H, Axtell C, Nielsen K, Sorensen G (2022) Organisational interventions to improve employees' health and wellbeing. Appl Psychol 71:1058–1081. https://doi.org/10.1111/apps.12346

Rosenbaum E, Grossmeier J, Imboden M, Noeldner S (2020) The HERO health and well-being best practices scorecard. Am J Health Promot 34:321–323. https://doi.org/10.1177/0890117119898026

Schroeder H (2024) Vom Arbeitgeber- zum Arbeitnehmermarkt? [From an employer's market to an employee's market?]. In: Badura B, Ducki A, Baumgardt J, Meyer M, Schroeder H (eds) Fehlzeiten Report 2024 [Absenteeism Report 2024]. Springer, pp 5–17. https://doi.org/10.1007/978-3-662-69620-0

Sell L, Bultmann U, Rugulies R, Villadsen E, Faber A, Søgaard K (2009) Predicting long-term sickness absence and early retirement pension. Int Arch Occup Environ Health 82:1133–1138. https://doi.org/10.1007/s00420-009-0417-6

Sozialgesetzbuch V (1988) Federal Ministry of Justice [German Social Code, Book V].

Sozialgesetzbuch IX (2001) Federal Ministry of Justice [German Social Code, Book IX]. https://www.gesetze-im-internet.de/sgb_9/. Accessed 26 January 2026

Spencer E, Brassey J, Mahtani K (2017) Catalogue of Bias: Recall Bias. https://catalogofbias.org/biases/recall-bias/. Accessed 26 January 2026

von Thiele Schwarz U, Sørensen OH, Tafvelin S, Roczniewska M (2024) Complexity embraced: a new perspective on the evaluation of organisational interventions. Work & stress 38(4):373–379. https://doi.org/10.1080/02678373.2024.2349000

Zeike S, Pfaff H (2022) Kennzahlen im BGM und Steuerung des BGM-Prozesses [Key figures in occupational health management and control of the occupational health management process]. In: Lange M, Matusiewicz D, Walle O (eds) Praxishandbuch Betriebliches Gesundheitsmanagement: Grundlagen – Standards – Trends. Haufe-Lexware [Practical Handbook on Occupational Health Management: Fundamentals – Standards – Trends], Freiburg, pp 379–401. https://doi.org/10.34157/9783648158821

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.